Building Capacities of ICDS health functionaries and adolescents to improve adolescent health and nutritional status

Synopsis of Research Work

Supervised by

Dr. Swati Vyas

Sr. Assistant Professor

Submitted by

Pragya Tomar

Research Scholar

Department of Home Science

The IIS University International College for girls

Jaipur (Rajasthan)

Introduction

Female adolescent nutrition is particular important tool in combating the vicious cycle of intergenerational under nutrition. If not addressed properly, adolescent under nutrition perpetuates this cycle (undernourished mother produce low birth weight babies, who grow into undernourished children and adolescent). Females adolescents, compared to their male counterparts, face disproportionate health concerns following puberty; foremost among these are too-early pregnancy and frequent child bearing (UNFPA, 1997). Adolescent girls are a core resource for national growth. Investment in their health and development is investment in the greater well-being of the country. Considering that several of these girls are out of school, get married early, face discrimination in assessing health, education and other services and work in vulnerable situation, and are influenced by peer pressure, they need special attention. The public health challenges for adolescent, which include pregnancy, risk of maternal and infant mortality, sexually transmitted disease and reproductive tract infections, rapidly rising incidence of HIV, etc., require influencing the health seeking behaviour of Adolescents. (Empowering the adolescent Girls- Sabla, 2012).

Adolescence: A period of transition

The word adolescence is coined from the Latin verb 'adolescere' that implies "to grow into maturity". Therefore adolescence can be regarded as a process of achieving the attitude and beliefs needed for effective participation in a society and adolescence is also that period of rapid growth. Adolescence is one of the crucial periods passes through in life (Omotoso and Olukunle, 2007).

WHO (2010) identifies adolescence as the period in human growth and development that occurs after childhood and before adulthood, from ages 10 to19. It represents one of the critical transitions in the life span and is characterized by a tremendous pace in growth and change that is second only to

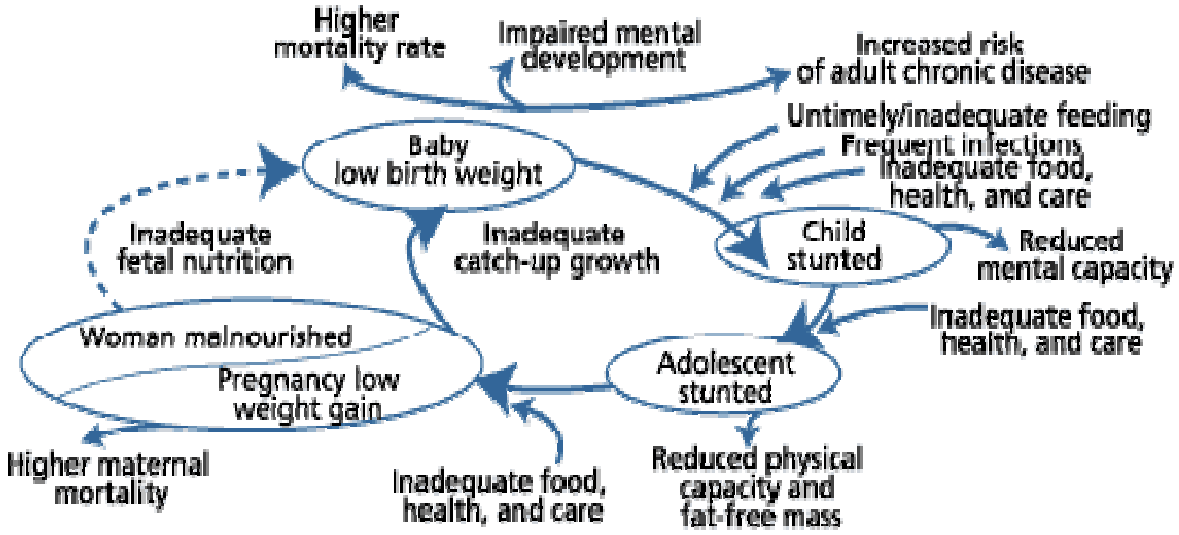
that of infancy. Globally, the number of young people between ages 10 and 24 is at all time high of more than 1.8 billion. Over 90 percent of those living in developing countries, under the age of 25 make up as much as 47 percent of the total population (ICRW, 2010). Demographically, India is a young country today as more than 70% of the population is under the age of 35 years. According to census 2001, there are 225 million adolescents in the age group of 10 to 19 years (Singh et al, 2011). India is home to more than 243 million adolescents, who account for a quarter of the country's population (UNICEF, 2011). Adolescents are the citizens and working force of tomorrow. But they are mostly overlooked in most health programs as they are basically considered a healthy group (Mehta et al, 2013).

Nutritional and Reproductive health complications in Adolescent

Adolescence is a developmental period characterized by rapid physiologic, psychological, and social changes that influence dietary needs as well as the individual's ability to supply those need. In general, sound nutritional habits that are established during childhood and adolescence are considered essential for proper growth and development, reduction of chronic disease risk, and long-term quality of life. Good health is essential for effective learning. By eating well and engaging in other healthy behaviours, adolescents can boost their performance levels and successfully master key growth and developmental tasks (Stokes, 2002).

Total nutrient needs are greater during adolescence than at any other time of life, except for pregnancy and lactation.

(WWW.medicalnewstoday.com/article/179316.php)



Source: Adapted from the ACC/SCN-appointed Commission on the Nutrition Challenges of the 21st Century.

Adequate nutrition, a fundamental cornerstone of any individual's health, is especially critical for women because inadequate nutrition does not only affects women's health but also, the health of their children. Children of malnourished women are more likely to face cognitive impairments, short stature, lower resistance to infections, and a higher risk of disease and death throughout their lives (Stuart, 2001). This age group is particularly vulnerable to anemia and a significant association of anaemia was reported with excessive menstrual bleeding, history of worm infestation, malaria, vegetarian diet and positive marital status.

According to WHO in 2011, India has the highest prevalence of iron-deficiency anemia among women, including adolescents, worldwide. Between 60 and 70 percent of Indian adolescent girls are anemic. Generally, adolescents are susceptible to iron deficiency anemia because of increased iron requirements due to rapid growth. Female adolescents require more iron after reaching menarche. Preventive measures should be undertaken to ensure females enter

their reproductive years without nutrition deficiencies particularly iron (Yusoff et al, 2012).

Deshpande et al, 2014 reported that 60% adolescent girls were found to be anaemic in Maharashtra. In the study of Premlatha et al in 2012, 78% were anaemic with varying degrees in Chennai. According to Dutt et al in 2009 ,the prevalence of anaemia was found to be 61% in Maharashtra.

According to WHO, 250 million new cases of STD occur worldwide each year with a high rate in 16-19yrs age group (Singh et al, 2004). Kulkarni and Durge, 2011 reported that 65.18% girls were suffering from one or more reproductive morbidity in Nagpur . Davoren et al, (2014) reported that 42.1% of adolescent girls were diagnosed with an Sexually Transmitted Infection (STI) in Ireland .
In United States, the prevalence of sexually transmitted disease rate was 33.7 (Forhan et al, 2009). According to the Kenya AIDS Indicator Survey 2007, the prevalence of HIV among young people (15-24) is 3.8%. Young women are four times more likely to be infected with HIV than young men. Given the high level of unprotected sex among young people and relatively high levels of HIV infection, we can assume that the rates of other sexually transmitted infections are also high (NASCC, 2007).
Reproductive health education is a key strategy for promoting safe sexual behaviour among teenagers Reproductive health education, including messages to encourage abstinence and promote the use of condoms and contraceptives by those who are sexually active, is the front line of efforts to prevent pregnancy, AIDS and other sexually transmitted diseases (STDs) among adolescents. (Lindberg et al, 2000).

Several researches have highlighted that nutrition related knowledge of adolescent girls is not up to the mark and majority of them are not aware about their nutritional needs. Ignorance about micronutrients and protective foods

prevails among them. Majority of them are not aware about the harmful effect of micronutrients deficiency and whatever nutrition knowledge is imparted in the school or through family is too superficial to make any tangible effect on their nutritional status. There is no awareness about their nutritional requirement and their dietary practices are far from being satisfactory (Choudhary et al, 2010 Sharma et al, 2009 and Thanuja and Ramya, 2007). Besides nutritional knowledge, knowledge related to health is equally important.Learning about menstrual hygiene is a vital part of health education for adolescent girls so that they can continue to work and maintain hygenic habits throughout their adult life and improve their maternal health (Haque et al, 2014).

Although several programmes have been launched by Government of India but still the complications remains the same hence it is realized that the supplementation programmes should be clubbed with educational interventions to ensure better results.

Programs related to Nutrition and Reproductive health education among adolescent

For adolescents, livelihood programs can exist as standalone interventions or be linked to Sexual and Reproductive health and Rights (SRHR) programs. Early marriage and pregnancy, abortion, STIs including HIV, impact their educational and economic pursuits. Entry into the labor force and economic options during adolescence determine exposure to health risks, fertility outcomes and overall well-being. Communities recognize the interrelationship between reproductive health and livelihoods for young people. The Constitution of India (1951) not only grants equality to women and forbids and discrimination based on religion, race caste, sex or place of birth but also empowers the state to practice protective discrimination in favour of women. Following programmes have been conducted for adolescent empowerment.

Table no. 1 : Programme for Adolescent Empowerment

Programme	Beneficiaries	Objectives
UNFPA, (The United Nations Population Fund) , 2014	The Non-Formal Education Centre has focused on out-of-school adolescents, enveloping programmes and other forms of IEC materials.	Delaying marriage and pregnancy Increasing the demand for and use of voluntary family planning techniques. Improving sexual and reproductive health and HIV knowledge and practices Reducing school drop-out
Kishori Shakti Yojna. (2014). Ministry of Women and Child Development, Government of India.	Adolescent girls	To improve the nutrition and health status of girls in the age-group of 11 to 18 years To equip them to improve and upgrade their home-based and vocational skills, and to promote their overall development To create awareness about their health, personal hygiene, nutrition and family welfare and management
Rajiv Gandhi Scheme for Empowerment of Adolescent Girls (RGSEAG) SABLA, 2010	The scheme focuses on all out-of-school adolescent girls (11-18 yrs) who would assemble at the Anganwadi Centre (AWC) as per timetable and frequency to be decided by the State Governments /UTs concerned.	Self-development and empowerment . Improving their nutrition and health status; Reproductive and Sexual Health (ARSH), family and child care education

		upgrading their home-based skills, life skills and vocational skills; formal/non formal-education Creating awareness about public services, such as PHC, CHC, Post office, Bank, Police Station, etc.
National Rural Health Mission, 2006	Information, counselling and services related to sexual concerns, pregnancy, Contraception, abortion, menstural problems , etc. Nutrition counselling, prevention and management of anaemia	Enabling adolescents to seek the health services they need Informing them about the availability of good quality health services
Mahila Samkhya, 1988	The Mahila Samakhya programme was launched in 1988 in pursuance of the goals of the New Education Policy (1986) and the Programme of Action as a concrete programme for the education and empowerment of women in rural areas, particularly of women from socially and economically marginalised groups.	Enhance self-esteem and self-confidence of women; Building a positive image of women by recognizing their contribution to the society, polity and the economy; Fostering decision making and action through collective processes; Enable women to make informed choices in areas like education, employment and health Providing information, knowledge and skill for economic independence

CEDPA, 1975	Launched two projects UDAAN and TARANG in the states of Jharkhand and Bihar.	To enhance awareness on nutrition, hygiene, sexual and reproductive health, HIV and civic responsibility and vocational training to reach out to in-school adolescents.

Role of ICDS in implementation of Adolescent nutritional and health care services

The Adolescent Girls (AG) Scheme under ICDS primarily aimed at breaking the inter-generational life-cycle of nutritional and gender disadvantage and providing a supportive environment for self-development. The Scheme aims to improve the nutritional and health status of vulnerable through providing a package of services including supplementary nutrition, pre-school education, immunization, health check-up, referral services and nutrition & health education. In addition, the Scheme envisages effective convergence of inter-sect oral services in the Anganwadi centers (ICDS, 2012).

Kishori Shakti Yojana (KSY), was launched by The Ministry of Women and Child Development, Government of India, in the year 2000. *I*mplemented was done using the infrastructure of the Integrated Child Development Services Scheme (ICDS). Thereafter, the Nutrition Programme for Adolescent Girls (NPAG) was initiated as a pilot project in the year 2002-03 in 51 identified districts across the country to address the problem of under-nutrition among AGs. Under this programme, 6 kg of free food grain per beneficiary per month was given to undernourished AGs. A new comprehensive scheme, called Rajiv Gandhi Scheme for Empowerment of Adolescent Girls or SABLA, merging the

erstwhile KSY and NPAG schemes has been formulated to address the multidimensional problems of AGs. SABLA is implemented in 200 districts selected across the country, using the platform of ICDS.

The objectives of the scheme are to:

(i) Enable self-development and empowerment of AGs;

(ii) Improve their nutrition and health status;

(iii) Spread awareness among them about health, hygiene, nutrition, Adolescent Reproductive and Sexual Health (ARSH), and family and child care;

(iv) Upgrade their home-based skills, life skills and vocational skills;

(v) Mainstream out-of-school AGs into formal/non formal-education; and

(vi) Inform and guide them about existing public services, such as PHC, CHC, Post Office, Bank, Police Station, etc.

SABLA aims at covering AGs in the age group of 11 to 18 years under all ICDS projects in selected 200 districts across India on pilot basis. Keeping in view the need of different ages and in order to give appropriate attention for certain components of ARSH and family matters, the target group was subdivided into two categories, viz., 11-14 and 15-18 years for planning interventions on health and personal hygiene accordingly.

The programme involved giving life skills education, nutrition and health education, awareness about socio-legal issues, etc. This will provide an opportunity for mixed group interaction between school-going and out-of-school girls, motivating the latter to also join school and help the school going to receive the life skills.

Services for Adolescent Girls:

- **Supplement nutrition**:

  All adolescent get 500 calories and 20-25grams of protein. Girls enrolled in school get calories and protein through mid day meal scheme and girls enrolled in aganwadi centres get nutrition from aganwadi centres.

140 gram halwa and 130 gm upma is also provided to all adolescent girls enrolled at aganwadi centres.

- **Tablets of Iron Folic acid (IFA):** Administration of Weekly Iron and Folic Acid Supplementation (WIFS) is given to all the adolescent girls enrolled in SABLA scheme at anganwadi centers. Each IFA tablet containing 100mg elemental iron and 500µg folic acid is distributed for 52 weeks in a year.
- **Nutrition education**: Nutrition and Health Education (NHE) is a key element of the work of the Anganwadi worker NHE comprises of basic health, nutrition information, utilization of health services, family planning and environmental sanitation. Health education is provided by using IEC material, through media and informal meeting with people. A crucial aspect here is providing health, education through home visits. This forms part of BCC (Behavior Change Communication) strategy. This has the long term goal of capacity-building of women – especially in the age group of 15-45 years – so that they can look after their own health, nutrition and development needs as well as that of their children and families.

  In spite of these programmes still the knowledge, attitude and practices of adolescents given with regards to Nutrition and Reproductive health are very superficial and not up to the mark particularly in Rajasthan.

Capacity Building and better compliance of nutrition and health intervention programs

ICDS programme for adolescent girls has taken into account all the minute details for behaviour change communication still there is some lacunae in services provided particularly at the implementation phase which is reflected in poor compliance. This may be one of the major reason why we have still not been able to break the vicious cycle of intergenerational malnutrition.

The study was conducted by Zaryab in Gujarat district, 2014 to assess the awareness of aganwadi health workers about nutrition. The results reflected that 75% of AWW have no information about nutrition. Chaudasama et al, 2012 conducted a study in Gujarat which revealed that the system of record maintenance in most of the AWC is poor and Level of awareness among the intended beneficiaries about their entitlement from out of this scheme is pretty low. A total of 38.3% AWCs reported shortage of Supplementary Nutrition supply, more in rural (41.3%) in comparison to urban (28.6%). Various problems were reported by anganwadi workers related to Supplementary Nutrition like lack of storage facility, non availability of separate kitchen, poor quality of food, irregular supply, inadequate supply, and fuel problem.

According to Gupta et al in 2013, the results highlighted in Jharkhand that non-formal education, nutritional and health education are not functioning in the way they are planned to be and training components need to be strengthened. An Evaluation study of ICDS in Surat district was conducted in 2011 the report highlighted that there was no awareness about target group. Only 48%knew that pregnant women and lactating mothers come under ICDS and none of the people mentioned adolescent girls as a target group of the ICDS and the AWC were not possessing strong infrastructural inventories to be able to provide the services expected of them. AWC lack safe drinking water, toilets and teaching aids to impart education. There was problem of Ineffective training programme for AWWs, Poor quality monitoring of AWC, Poor maintenance of growth charts, lack the basic facilities like training rooms, proper hostel facilities training materials, audio-visual equipments and trainers. Inappropriate supervision and monitoring of the training centres and trainees was done and Field visits as a part of the Anganwadi Workers (AWW) trainings were skipped.

According to UNICEF Bihar in 2007 some gaps were identified in Aganwadi centre that records of training activities at block level not maintained **,** Shortage

of personnel at the training centers and no body supervises these centers. Training material, methods are alright but the evaluation of trainees is not done properly and sometimes IEC materials do not available. Its really difficult to get resource persons and records of training activities are not maintained too. Regular training are not provided to workers.

Separate storage facility was available only in 16.4% of the anganwadi centres. In most of the other cases, the food materials were stored in the house of the Anganwadi workers. With regard to problems in functioning, majority of the Anganwadi centres mentioned that lack of infrastructure was the major problem followed by lack of cooperation in availing services or participating in activities by the community. More than three-fourth of the supervisory staff were found to be unable to move in the field or make any visits to the Anganwadi centre. Thus the AWWs did not receive much guidance and supervision during their work from CDPOs. It can be concluded that inadequate support for monitoring under the programme will have direct impact on the functioning of the Anganwadi centre, such as, performance of the worker and the quality of services reaching the beneficiaries. Thus, the success of ICDS programme largely depends on a feasible monitoring mechanism which is actually taking place through field visits and during reviews held in blocks, districts and state reviews.

Hence capacity building strategies is essential for strengthening of local organizations and government units to implement the full array of activities required to sustain national program outputs.Capacity building requires the same rigorous monitoring and evaluation as other interventions, therefore, monitoring and evaluation of capacity building efforts should be programmed from the beginning, and should be designed to demonstrate results.

Some findings suggested that capacity building for aganwadi workers have its positive effects on their work.Trainings for health care providers functionaries

needs focus on development of technical understanding and necessary capacity of the front line workers.

There is immense need for health care providers to understand their role in implementation of the program. Training curriculum needs to incorporate the coordination and synergy the front line staff need to have with other line departments (health, education, water/sanitation, rural development). The weakest link in health care providers is Nutrition and Health Education (NHED). It is thus important to build capacity on Behavior Change Communication (BCC). This will help health care providers to prioritize home visits and provide nutrition education to families on child care.

In all capacity building programs be related to enhance self-esteem of girls, women and concerns of addressing and involving men and communities in the women's health concerns are consciously integrated. As they are already functioning in their centres it is important that the Training programme is built into what they are doing, in a right way.If the trainers and monitors of their work are the same set of people it will fill in a lot of gaps (Elamon et al, 2010, Panda, 2010 & Tiwari, 2010).

Significance of the study

Adolescence is the period of transition from childhood to adulthood. WHO (2010) has defined adolescence as the age group of 10-19 years. Adolescents comprise 1/5 of the World's population of 1.2 billion. Adolescents may face troubles due to lack of right kind of information regarding their own nutritional health and sexual developments. Therefore it is need to train these vulnerable group regarding reproductive, health and nutritional awareness. Especially for girl and woman it is essential to educate this population because, today girls are future mothers. To strengthen any nation there is need of healthy mothers. Only healthy mothers can produce health citizens (Sajjan et al, 2007). Reductions in morbidity and mortality associated with lifestyle diseases may be achievable if satisfactory nutritional practices are adopted in early life and maintained in the long-term During adolescence, young people are assuming responsibility for their own eating habits, health-related attitudes and behaviours and their growing independence is often associated with unconventional eating patterns .Although dietary behaviour during adolescence may be transitory in some individuals, health related behaviours show tracking through adolescence their dietary habits appeared to be established by the age of 15. If habits acquired in adolescence persist into adult life, behaviours established in young people may have important long-term consequences for health (Gracey et al, 1996). National Family Health Survey (NFHS) in 2007 plevelance of nutritional anemia to be 70-80%. According to WHO in 2010 nearly 50% adolescent girls are anaemic.With 40% prevalence of nutritional anemia in the world on an average for the general population, the prevalence in the developing countries tends to be three to four times higher than in the developed countries. Anemia not only affects the present health status, but also has deleterious effects in the future. Learning, cognitive function, and scholastic performance is also severely affected. The rates of low birth weight, pre-maturity, neonatal and infant

mortality among children born to undernourished adolescent girls is high. Later on these undernourished girls becomes anemic and produce low birth weight babies (Deshpande et al, 2014).

Besides deficiencies reproductive health of adolescent girls is of major concern during this as it is of increased risk taking and therefore susceptibility to behavioural problems at the time of puberty and new concerns about reproductive health also emerge. Majority of adolescents still do not have access to information and education on sexuality, reproduction and sexual and reproductive health and rights, nor do they have access to preventive and curative service (Kotecha et al, 2009). Young girls grow up with limited knowledge of menstruation, there are many unhealthy menstrual practices and taboos which can be improved through education which is an essential resource for improving their existing practices. Poor menstrual hygiene is closely related with reproductive tract infections (Malleshappa et al, 2011). The WHO (2010) believes that education for health is a fundamental right of every individual.

Hence Reproductive health and nutritional awareness should be given priority in health care to have healthy mothers to get healthy children. After several years of independence, India is far behind in maintaining good health as indicated through parameters as IMR, MMR, HIV infected persons, diseased conditions of family members etc (Barua and Kurz, 2001). Although so many studies have been done on this criteria but still the problem persists so there is need to provide awareness till the time it get finished. Community capacity building is necessary feature of participatory governance and strong civil society.

Capacity building is an excellent opportunity for local people to become more skilled and feel more involved in the decision which affect their lives and community. Their confidence grow day by day, and at the same time the group's organizational development has meant that their meetings are becoming more effective (Education Scotland, 2012).The present study will focus on

building capacity of Aganwadi workers involved in imparting nutrition and reproductive health knowledge to adolescent girls enrolled in Aganwadi centres under SABLA scheme. Creating awareness regarding nutrition and reproductive health will also be focused by giving educational intervention to adolescent girls through Anganwadi workers. It will help to keep sustainability of programme so that the adolescent girls can follow those things for their life.

Objectives

1) To assess the knowledge and perception & practices of anganwadi service providers involved in delivering adolescent health and nutrition services under ICDS [SABLA , ARSH(Adolescent reproductive and sexual health), NSDP (National Skill Development Program), Nutrition provision, IFA supplementation, health check-up and Referral services, life skill education and assessing public services].

2) To build capacity of workers through training for enhancing their knowledge and understanding related to ICDS & Health services especially for adolescent girls/women.

3) To evaluate existing knowledge, attitude and practices related to nutrition and reproductive health of adolescent girls enrolled at Aganwadi centres.

4) To develop and implement a need felt nutrition and reproductive health nutrition health education strategy for adolescent girls for duration of 6 month.

5) Impact evaluation of the launched nutrition and reproductive health education strategy.

6) To perform a follow up study after a gap of three months post intervention phase.

Methodology

This chapter of study is mainly concerned with the methodological aspects pertaining to the present investigation. The design of the study refers to the logical manner in which units of study will be assessed and analysed for the purpose of the drawing conclusion.

The study will be conducted in 4 phases:

PHASE I: Pre intervention study (Baseline study)

- **Demographic information**
    - Locale of the study
- **Assessment of Knowledge and Perceptions and practices of change agents or health and nutrition service providers regarding services provided under ICDS & health for adolescent girl**
- **Capacity Building and enhancing self sustainability of change agents for providing services to the adolescent girls enrolled in SABLA programme .**
- **Selection and enrolment of Adolescent Girls**
    - Sample selection
    - General information
- **Assessment of nutritional status of Adolescent Girls**
- Anthropometry Measurements (Height, Weight calculation of BMI)
- Qualitative Assessment of Dietary Intake for iron, energy and protein (Food Frequency Questionnaire)
- Regularity of Weekly IFA Received and consumed
- Biannual Deworming received and its compliance (Receipt of deworming in last 6 months)
- Haemoglobin estimation
- **Formulation of KAP's tool for Adolescent Girls**

- Assessment of knowledge attitude and practices related to Nutrition identify key behaviours you want to modify
- Assessment of knowledge attitude and practices related to Reproductive health. identify key behaviours you want to modify

PHASE- II : Intervention Phase

- Development of a tailor made educational package for nutrition and reproductive health campaign with selected 3-5 behaviours which require modification as per baseline needs assessment.

- Implementation of programme for 4 months at anganwadi centers how frequently who will do it (twice in a week as adolescent girls enrolled in SABLA programme attend centers on Monday and Thursday through aganwadi workers).

PHASE- III: Post intervention

- Impact assessment of educational intervention using KAP's tool immediately after completion of intervention phase.

- Data analysis and report writing

PHASE- IV Follow up study three months after completion of intervention phase

Phase-I (Pre-intervention) 3 months

➢ Demographic Information

Locale of the study: Present study will be conducted in Jaipur district (Rajasthan). The population of the district is 3,355,070 the literacy rate being 76% and female literacy rate being 65. Initially list of all Aganwadi centers covered under ICDS in Jaipur city will be obtained from Department of Women and Child Development. Twenty pariyojana (15 rural and 5

urban) of ICDS are ongoing in Jaipur city and under each there are 150 anganwadi centers. We will select one rural pariyojna 'Chomu'. Top to bottom approach will be followed. We will select 75 agwanwadi centre for experimental group (each centre has 2 health functionaries hence total 150 aww and awh and 3 supervisors) and rest 75 centre will serve as control. The existing Knowledge attitudes and practices of health functionaries of both the categories related to the nutritional and health services extended through to adolescent girls will be evaluated using KAP's tool. There after need felt training sessions and workshops will be conducted for the experimental category modules and IEC materials will be developed however control group will not be trained. After that randomly we will select 10 centres from experimental and 10 from control group for close supervision of services provided to the adolescent girls. For this regular visits will be conducted.

Assessment of Knowledge, Attitude & practices of ICDS/Health field functionaries:

The Knowledge and perception of the anganwadi workers related to nutrition and reproductive health (aganwadi workers also give the reproductive health to the adolescent girls) is very essential component as they are the service providers. Two workers (AWW and ANM) are responsible for Aganwadi centre for providing services to adolescent girls who are enrolled in Aganwadi centre. ICDS Supervisors and ASHA also facilitate enrolment of adolescent girls and frame the timetable for providing these services. ANM is from Medical Health Deparment who provides reproductive health education to adolescent girls. Initially knowledge and perception of these change agents (AWW/ASHA/ANM) related to services provided under ICDS for adolescent girls will be assessed using a pre tested questionnaire. Questions will be related to the objectives of ongoing program, the services extended by the Government

of India to the adolescent girls. Knowledge related to the rights of women under Indian constitution, their knowledge related to nutrition and reproductive health of adolescent girls will be checked.

- All the gaps or lacunae between desirable state and actual will be identified by conducting key informant interviews & Focus group discussions with few selected adolescent sakhis and sahelis. Based on the information obtained a training module will be developed, translated, pretested
- Development of a training module with monitoring formats for supervisors and AWW/ANM will be prepared in local language keeping in mind the needs of change agents. A well structured training module with monitoring formats for supervisors and AWW/ANM will be prepared in local language. During translation the translated module will be again translated in English to confirm that whatever was intended to be conveyed is conveyed. The training module will incorporate following important features:
    - Proper implementation and regular monitoring of IFA tablets. Regular monitoring of consumption of nutrition supplements by adolescent girls. (checklist to be provided to AWW for recording that each enrolled adolescent receives the tablet and food supplementation, Taking Fruit or vitamin C rich food etc regularly from AWC)
    - Motivation regarding monthly health check-up and referral services.
    - Proper maintenance of kishori cards of adolescent girls.
    - Reducing side effects of IFA supplementation by consumption of vitamin C along with IFA tablets.
    - Proper use of IEC material to adolescent girls.
    - Organization of special health camps on kishori diwas in which demonstration of preparing nutritious recipes will be included.

- Strengthening and empowering adolescent girls for their future lives as adult like developing confidence and building knowledge how they access public services like PHC, CHC, Post Office, Bank, Police Station etc. and ability to make decision.
- Training for taking anthropometric measurement ie Height and Weight, standardization of weighing scales etc as well as Calculation of BMI for health assessment (skill building sessions).

Training booklet for adolescents

Similarly with the help of supervisors a small pictorial booklet will be developed and distributed to all adolescent girls in experimental group with the following key messages in 3 broad areas namely nutrition, health including sexual health & safe hygienic environment, Adolescent girls will be asked to mark in the compliance card (provided to them} if she has consumed the IFA tablet every week for six months of intervention.

Nutrition

- Consequences of malnutrition and iron deficiency anemia and importance of having healthy weight and how to calculate and interpret your BMI etc. Need for not sharing the supplementary food upma and halwa) given to them and importance of consuming the whole ration of supplementary food. (first month message and regular reinforcement every month with IEC and counselling session).
- healthy cooking, eating habits, balanced diet and locally available iron rich, vitamin C rich foods (2^{nd} month till 5 months).

Health

- Importance of deworming and IFA supplementation to improve health etc. (first month message and regular reinforcement every month with IEC and counselling session).
- Personal hygiene, onset of puberty and related changes and menstrual hygiene (second month).

- Common ailments, home remedies, first aid, personal hygiene, exercise, etc(Third month).
- Safe sex and prevention of HIV & sexually transmitted diseases etc (Fourth month)
- Educating on avoiding tobacco, stress management, etc. (5^{th} month)
- Reinforcement of all Key health messages) (6 months)

Safe environment

- Safe water, water borne diseases and its adverse impact on nutritional status (First month)
- Keeping hygienic environments and the role of worm infestation in malnutrition and anemia and importance of deworming & IFA supplementation (Second month)
- Use of chappals to prevent hook worm infestations to prevent anemia, Importance of handwashing with soap to prevent illness (third month)
- Toilet use etc. (Fourth month)
- Regular reinforcement of messaged by IEC, Posters and counselling sessions (5-6 month)

- Auditing of the IEC material already available with the AWC and sub health center or available from UNICEF website or MOHFW/ WCD website (Translated in local language), identifying gaps and development and pretesting of new IEC material if required. Distribution of IEC material to all AWC in the experimental group.

Phase II Intervention phase 6 months

- **Capacity building of change agents:**

Capacity building or empowerment of the change agents ie workers involved in ongoing programme will be based on increasing coverage of

adolescent girls, improving their knowledge and skills to monitor nutrition, health (reproductive health including menstrual hygiene) status of adolescents, calculate their BMI, and develop understanding of key messages to be delivered to improve adolescent health & counselling skills for improving the health and nutritional status of adolescents.

After identification of all gaps 2 days workshop will be conducted for the supervisors (3) and health functionaries (n=150) of experimental group however no training will be provided to control. For conduction of workshop permission from DWCD will be taken.

Capacity Building Supervisors, Aganwadi workers as well as helpers in experimental group

Supervisors, aganwadi workers and aganwadi helpers will be trained under by conducting a 3 day capacity building workshop to improve the understanding of essential interventions for adolescents to improve their health including reproductive health and nutritional status by using the training module and IEC material and the monitoring formats.

Interventions for adolescents (Nutrition health education/Behaviour change communication)

Selection and enrolment of Adolescent Girls

- We will select randomly 10 aganwadi centres in experimental and 10 from control group for close supervision.
- All the adolescent girls aged between 10 to 18 years enrolled in Aganwadi centres (both control and experimental) will be contacted with the help of change agents. Nutritional status assessment & haemoglobin status will be assessed at baseline in both experimental and control groups. The AWW and ANM will be asked to jointly conduct behaviour change communication sessions for the enrolled girls in experimental group, a roaster of fixed days when training will be given to adolescents

on different topics each week will be developed and AWW/ANM will be given the responsibility of conducting sessions according to roaster. Regular supervision and proper check will be ensured by the supervisor and researcher. Data on number of girls enrolled vs no of girls attending sessions every week will be maintained by AWW and the status will be reviewed by supervisor every month.

- Fixed day every week will be utilised by AWWs of the experimental group to deliver key messages from the booklet provided to all adolescent girls on :

  Nutrition (first week),

  Health (second week) and

  Environmental sanitation (3rd week) respectively every week

  Reinforcement of messages along with nutrition assessment and counselling will be given by AWW (4th week).

Assessment of nutritional status of adolescent girls by change agents will be done every month on a fixed day and appropriate counselling will be done:

AWW, will ensure recording of height, weight and BMI of AGs on Kishori Cards, in order to keep a close watch on the status of growth of AGs. Adult weighing scales provided to AWCs under ICDS would be used for weighing AGs.

- ✓ **Nutrtional & Haemoglobin status .**Haemoglobin estimation and nutritional status assessment will be done twice once at baseline and at end of intervention period in both experimental and control groups. Nutritional status assesment in experimental group will be done on a fixed day every month for six months. Albandazole (100ug) will be purchased (government is supposed to provide) and consent will be taken from the parents of adolescent girls.

Phase- III (Post intervention phase):

- **Impact assessment of education intervention programme on Haemoglobin status, nutritional status**

  After completion of the intervention phase a gap of 3 months will be taken and during that period the IEC material will be left displayed in the aganwadi centre and the change agents will also be motivated to keep reinforcing knowledge related to nutrition and reproductive health to the enrolled adolescent girls for ensuring better sustainability of the programme. For monitoring of this phase surprise visits will be done at the anganwadi centers to confirm that they are still working actively.

  Data analysis and report writing: After intervention, the assessment of data will be done. The responses in the questionnaires will be entered in the MS office Excel sheet and percentages, paired t-test, Chi-square test will be used to calculate results. Difference between proportions of the pre-post data and 95% confidence interval will be calculated of the findings. SPSS will be used for data analysis. The level of significance will be considered at p value<0.05.

References

1. Action for Adolescent Girls. (2014). UNFPA (United National Population Fund).
2. Addressing Comprehensive Needs of Adolescent Girls In India (A Potential for Creating Livelihoods. (2010) ICRW (International Centre Research on Women)
3. Adolescent and Sexual health. (1997). UNFPA.
4. Adolescent: An age an opputunity. (2011), UNICEF.
5. Alam, N., Roy,SK., Ahmed, T., and Ahmed, AMS. (2010). Nutritional Status, Dietary Intake, and Relevant Knowledge of Adolsecent Girls in Rural Bangladesh. *Journal of Health population Nutrition*, 28(1), 86-94.
6. Barooah, P. (2012). Adolescent's Nutrition and Practices. Basic Applied and Social Science, 2, 308-311.
7. Barua, A., and Kurz, k. (2001). Reproductive Health Seeking by Married adolescent girls in Maharashtra, India. *Reproductive Health Matters,* 9(17),53-62.
8. Bhuyan, K. K. (2004). Health promotion through self-care and community participation: elements of a proposed programme in the developing countries. *BMC Public Health,* 4, 11.
9. Chiou, M. H., Wang, H. H. (2007). "Effect of Systematic Menstraul Health Education on Dysmennorrheic Female Adolescent's knowledge, attitude and self-care behaviour". *The Kaohsiung Journal of Medical Sciences,* 23(4), 183-190.
10. Choudhary, S., Chatterjee, K., Ali, MK., Ghosh, D. and Paul, S. 2010. Assesment of Nutritional Status of Rular early Adolescent School Girls in Dabtan-II Block, Paschim Medinipur District, West Bengal. National *Journal of Community Medicine*, 2(1), 45-50.

11. Davoren, M. P., Hayes, K.,Harogan, M., and Shiely, F. (2014). Sexually Transmitted Infection Incidence Among Adolescent in Ireland. *J. Fam Plann Reprod Health Care*, 0, 1-7.
12. Deshpande, NS., Karva, D., Agarkhedkar, S. And Deshpande, S. (2014). Prevalence of Anaemia in Adolescent girls and its co-relation with demographic factors. *International Journal of Medicine and Public Health*, 3(4), 235-238.
13. Devi, K., and Ramaiah, P. (1994). "A study on menstrual hygiene among rural adolescent girls." Indian Journal of Medical Sciences, 48(6): 139-143.
14. Dutt, R., Patil, S., Joshi, S., Mhathre, R., and Ramdev. (2009). Prevalence of Anaemia Among Adolescent Girls in Rural Area of Raigad District, Maharashtra, India. *J. Prev. Soc. Med*, 40(3), 143-146.
15. Forhan, S. E., Gottlieb, S.L., Sternberg, M. R., Xu, F., Datta, D., Geraldine, M., Quillan, M. C., Berman, S. M., and Markowitz, L.E. (2009). Prevalence of Sexually Transmitted Infection Among Female Adolescent Aged 14 to 19 in the United States. *Pediatrics*, 124(6), 1505-1512.
16. Gracey, D., Stanley, N., Burke, V., Corti, B., and Beilin, L. J.(1996). Nutritional knowledge, beliefs and behaviours in teenage school students. *Health Education Research*, 2, 187-204.
17. Gupta, N., Mathur, A. K, Singh, M. P., and Saxena, N. C. (2004). "Reproductive Health Awareness of School Going, Unmarried, Rural Adolescents. *Indian Journal of Pediatrics,* 71(9), 797-801.
18. Haque, S. E., Rahman, M., Itsuko, K., Mutahara, M., Sakisaka, K. (2014). The effect of school-based educational intervention on menstrual health: an intervention study among adolescent girls in Bangladesh. BMJ Open Access, 1-9.

19. Jain, S. (2003). "Editorial: Human capital and human capability." *World Development,* 25(12),1959–1961.

20. Khoshnevisan, F., Kimiagar, M., Kalantaree, N., Valaee, N., and Shaheedee, N. (2004). Effect of nutrition education and diet modification in iron depleted preschool children in nurseries in Tehran: A pilot study. *International Journal of Vitam Nutriton Research*, 745, 264-268.

21. Koteche, P. V., Nirupam, S., Karkar, P. D. (2009). Adolescent girls' anemia control program, Gujarat, India. *Indian J Med Res,*130: 584-9.

22. Kulkarni, MV. And Durge, MP.2011. Reproductive Health Morbidities among Adolescent Girls: Breaking the Silence*!*. *Ethno Med*, 5(3), 165-168.

23. Kumar, P., Pore, P., and Patil, U. (2012). HIV/AIDS related KAP Among High- School Students of Municipal Corporation School in Pune- An Interventional Study. *National Journal of Community Medicine*, 3(1), 74-79.

24. Lindberg, L. D., Ku, L., and Sonenstein, F. (2000). Adolescent Report of Reproductive Health Education on, 1998 and 1995. *Guttamacher Institute*, 32(5), 220-226.

25. Mahila Samakhya. (1988). Ministry of Human Resource Development, Government of India.

26. Malleshappa, K., Krishna, S., and Nandini, C. (2011). Knowledge and Attitude about Reproductice Health among Rural Adolescent Girls in Kuppam Mandal: An Intervention Study. *Biomedical Research*, 22(3), 19-23.

27. Mehta, B. (2013). Adolescent Reproductive and Sexual Health in India: *The Need to Focus. Journal of Young Medical Researchers.*2, 152-154.

28. Moore, J., Pawloski, L., Rodriguez, C., Lumbi, L., and Ailinger, R. (2009). The effect of nutrition education program on the nutrition knowledge, haemoglobin levels, and nutritional status of Nicaraguan adolescent girls. *Public Health Nursing*, 26, 144-152.
29. Mudliar, A. (2014). A study of knowledge towards balance diet and nutritional status of students. *Indian Stream Research*, 4(6), 1-5.
30. Nanda, P., Das, P., Singh, A., and Negi, R. (2013). Addressing Comprehensive Needs of Adolescent Girls in India: A Potential for Creating Livelihoods, New Delhi, International Centre for Research on Women.
31. National AIDS and STD Control Counsil, MOH, (2009). Kenya AIDS Indicator Survey, 2007.
32. National Rural Health Mission. (2006). Ministry of Health and Family Welfare Nirman Bhawan, New Delhi, Government of India.
33. Omotoso and Olukunle. (2007). Adolescent Transition: The Challenges and the way out (African Perspective)-Poster Presentation. Population Conference.
34. Patanwar, P. And Sharma, K. K. N. (2013) Awareness of Reproductive Health among the Kurmi Adolescent Girls of Raipur City, Chattisgarh, India. *International Journal of Research in Health Science*, 1(3), 126-133.
35. Premlatha, T., Valarmati, S., Srijayanth, P., Sunda, JS. and Kalpana, S. 2012. Prevalence of Anaemia and its Associated Factors among Adolescent School Girls in Chennai, Tamil Nadu. *Epidemiol an Open Access Journal*, 2(2).
36. Rajiv Gandhi Scheme for Empowerment of Adolescent Girls, SABLA. (2010). Ministry of Women and Child Development, Government of India.

37. Rajaratham, J., Abel, R., Asokan, J. S., and Jonathan, P. (2000). Prevalence of Anaemia among the Adolescent Girls of rural Tamil Nadu. *Indian Pediatrics*, 37, 532-536.

38. Ruzita, A. T., Wan Azdie, M. A. B., and Ismail, M. N. (2007). The effectiveness of nutrition education program for primary school children. *Mal J Nutr*, 13, 45-54.

39. Sajjan, J., Kasturiba, B., Naik, R. K., and Bharal, P. C. (2008). Impact of child to child Nutrition Knowledge Score and Hemoglobin Status of Rural Adolescent girls. *Karnataka Journal of Agriculture Science*, 24(4), 513-515.

40. Santina, T., Wehbe, N., Ziade, F. M., and N, M. (2013). Assessment of Beliefs and Practices Relating to Menstrual Hygiene of Adolescent Girls in Lebnon. *International Journal of Health Science and Research*, 3(12), 75-88.

41. Sharma, N., Basu, S., Basu, S.,Hazarika, R. And Parmari, V. (2009). Prevalence of Anaemia among School Going Adolescents of Chandigarh. Indian Pediatrics, 42, 45-49.

42. Singh, R., Garg, S. K., Singh, J. V., Bhatnagar, M., Chopra, H. (2004). An Awareness Study about AIDS And Safe Blood Among Higher Secondary Girl Students. *Indian Journal of Community Medicine* , 29(3), 114.

43. Singh, S., Kansal, S and Kumar, A. (2011). Assessment of Nutritonal Status of Adolescent Girls in Rular Area of District Varanasi. *The Indian Journal of Research Abvikshiki*, 52(2), 25-31.

44. Stokes, M. M. (2002). Adolescent Nutrition Needs and Recommendations for Practice. *The Clearing House*, 75(6), 286-291.

45. Stuart, K,. Kaur, M., and Borges C. (2001) Effect of health education on knowlege, attitude and practices about anaemia among rural women in Chandigarh. *Indian J Community Med,* 26: 128-32.
46. TARANG. (2012). CEDPA, Government of Bihar.
47. Thakre, S. B., Thakre, S. B., Reddy, N., Rathi, N., Pathak, K., Ughade, S. (2011). Menstrual Hygiene: Knowledge and Practices Among Adolescent School Girls of Saoner, Nagpur District. *Journal of Clinical and Diagnostic Research,* 5(5), 1027-1033.
48. Thanavanh, B., Rashid, H. O., Kasuya, H., and Sakamoto, J. (2013). Knowledge, Attitude and Practices Regarding HIV/AIDS Among Male High School Students in Lao People's Democratic Republic. *Journal of the International AIDS Society,* 16, 3-7.
49. Thanuja, B., and Ramya, V. (2007). Assessment of Nutritional Knowledge among Adolescent Girls and Impact of Nutrition education. *Cauvery Research Journal*, 1(1), 64-66.
50. The Issue: Adolescent Girl. (2010). ICRW.
51. Tse, M. M. Y., and Yuen, D. T. W. (2009). Effects of providing a nutrition education program for teenagers: Dietary and physical activity patterns. *Nursing and Health Sciences*, 11, 160-165.
52. UDAAN. (2012). CEDPA, Government of Jharkhand.
53. Verma, M., Chhatwal, J.,and Kaur, G. (2004). On prevalence of anaemia among urban school of Punjab. *Indian Pediatrics*, 35, 1181-1186.
54. World Health Organization. (1995). Physical status: The use and interpretation of anthropometry. Technical report series, Report No.:854.
55. Yusoff, H., Daud, W. N. W., and Ahmad, Z. (2012). Nutrrition Education and Knowledge, Attitude and Haemoglobin Status of Malaysian Adolescent, *Southeast Asian Journal of Tropical Medical Public Health*, 43(1), 192-200.